

REMARKS/ARGUMENTS

The above amendment of the claims and particularly the amendment of independent claim 3 is in response to the Office Action of November 27, 2007.

Claims 3-8 and 22 are in the application.

Claims 3-5, 7, 8 and 22 were rejected under 35 USC 103(a) as being unpatentable over Kajino et al. (US Patent No. 6,793,769). Claims 3-5, 7-11 (sic) and 22 were rejected under 35 USC 103(a) as being unpatentable over Adachi Hideki. Claim 6 was rejected under 35 USC 103(a) as being unpatentable over Adachi Hideki in view of Tsuchiya.

It is initially noted that the Kajino et al. patent reference and the present application are commonly owned and were commonly owned at the time the invention was made. The filing date of the Kajino et al. patent is October 25, 2002. The priority filing date of the present application is March 26, 2003 and such priority has been perfected, with the filing of the Verified Translation of the priority application on October 3, 2005. The Examiner is accordingly respectfully requested to remove the Kajino et al. patent as a reference under the provisions of 35 USC 103(c), if the present rejection, based on Kajino et al., is otherwise maintained.

In response to the above rejections it is further substantively submitted that with the above amendments, claim 3 (and the claims dependent thereon) specifically include:

"...a holding element provided on a rotating base for holding a peripheral portion of a substrate... [and] an atmosphere cutoff plate positioned above said holding element...";

a plurality of recovery ducts;

a first up-and-down moving element for moving an atmosphere cutoff plate up-and-down; and

a second up-and-down element for moving the plurality of recovery ducts up-and-down into selected recovery position.

These moving elements are controlled by a control unit which is configured to provide (by controlled movement) that for a chosen recovery duct the distance spacing between an upper guide member and a lower guide member is greater than the distance spacing between the rotating

base which holds the substrate and the atmosphere cutoff plate. The cited Kajino et al. and Adachi Hideki references do not disclose a control unit with the claimed movement parameters. Furthermore, the vertical thicknesses of the upper guide member and the lower guide member are neither disclosed nor taught by the cited references. It is submitted that, especially with respect to the operative function of the Hideki reference, inclusion of the thickness parameters, as claimed herein, would either provide no benefit or have the negative effect of unnecessarily increased material. One skilled in the art would not optimize the Hideki structure by modifying it to include the greater thickness parameters of the present claims, as posited by the Examiner.

The Hideki structure provides an alternative to the claimed present invention and the requisite parameters of the claimed present invention do not provide an optimization of the Hideki structure.

In the prior art as shown in Figure 5 of the present application, when the rotating base is rotated, a stream of air results from a rotation near the rotating base and a portion of the air stream flows into the recovery duct. The air flows affects the direction of a processing solution which is splashed in the direction of the horizontally positioned substrate and which is then directed and removed between the rotating base and the atmosphere cutoff plate as a result of centrifugal force of rotation. A portion of the splashed processing solution may return to the substrate by the air stream and be detrimentally re-deposited on the substrate. This is a particular problem when recovering processing solutions through a plurality of recovery ducts as in the structure of the presently claimed invention, when a distance between the rotating base, atmosphere cutoff plate and a substrate side recovery duct become shorter than another recovery duct. The result is that there is a chance of the splashed processing solution being returned to the recovery duct on the substrate side to be redeposited to the substrate. This can further result in a defect of substrate processing with redeposition influenced by air turbulence resulting from rotation of the rotating base. The Hideki reference embodies an approach to solving this problem by requiring a circular slit 80 (Figures 5 and 6 and paragraph 0057 of the translation) through which a gas will flow to form an air curtain which flows in an up-down direction between the rotating base/atmosphere cutoff plate and an opening of the recovery ducts at the same time to prevent reattachment of the treating solution mist to the substrate (paragraphs 0023 and 0024)

with Hideki specifying that, "...Since the reattachment to the substrate of the mist of a treating solution can be controlled, it is not necessary to design a device bring (sic) the inclined part of a guidance member close to the substrate held at the substrate holding means more than needed..."(par. 0023). Hideki, by utilizing an air barrier, renders any thickness parameters of rotating and atmosphere cutoff plates, as being irrelevant. Hideki specifically requires a separation distance between recovery duct and the plates for formation of the circular slit 80 for ingress of gas to form a protective air curtain. In contrast, the presently claimed invention is operable with the nearness of the recovery duct and plates. together with the requisite distance parameters and in the absence of an air curtain. Note that Figures 2 and 4 of the present application show that air flow S passes by the separation between the atmosphere cutoff plate and the upper portion of the recovery duct, without entry therein to form a protective air curtain. Instead, the claimed element configurations prevent any ingress of air flow resulting from the substrate rotation from entering into the recovery duct in the first instance.

In addition to the above, the Kajino et al reference is directed toward preventing mist of a processing solution from reaching the upper surface of a substrate. This is accomplished by keeping the substrate adhered to (via suction) and shielded by the upper atmosphere shielding part (see e.g., abstract, and Figures 1-7) with Figure 9 (showing a substrate supported on a base) actually being designated as prior art. The Kajino et al. structure is thus irrelevant and unrelated (except generally) in both structure and function to the presently claimed invention which requires "...a holding element provided on a rotating base for holding a peripheral portion of a substrate... [and] an atmosphere cutoff plate positioned above said holding element...", Kajino et al are only concerned with protecting an upper surface of a substrate and this is accomplished simply and directly by, in effect, covering it. Nothing is done to otherwise control or direct a generated mist of a processing solution. The structure of the Kajino et al reference does not even meet the elements or function of the present claims nor would one skilled in the art modify it to provide the present invention. Neither Kajino et al. nor Hideko are relevant to the claimed invention of claim 3 whereby they could or would be modified to provide the present invention and the Examiner is requested to review and withdraw the rejections of claim 3. Claims 4-8 and 22 are similarly patentable for at least the reasons given with respect to claim 3.

In view of the above amendment and discussion it is submitted that the claims are patentable over the prior art and the application is in condition for allowance with such favorable action being respectfully requested. Accordingly, the Examiner is respectfully requested to reconsider the application, allow the claims as amended and pass this case to issue.

Respectfully submitted,

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